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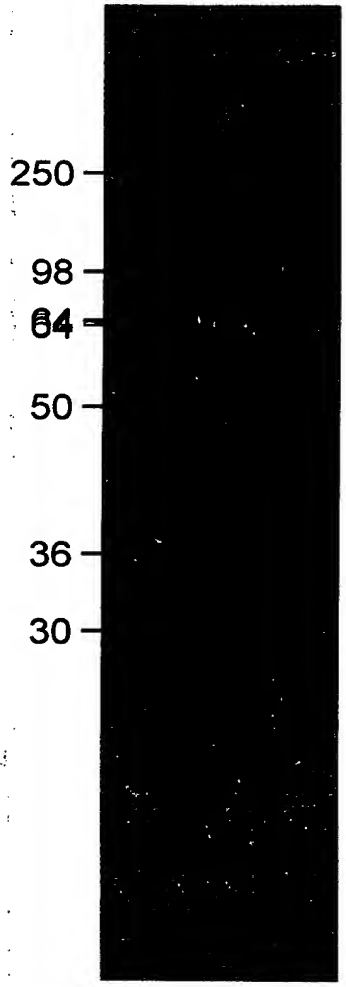

FIG. 1

GGGCAAAACTCTTCCCCCCGGGATTTATATGGGAAAGGGGAAACTTTGGC
CCGTATTCAAGCGCCACGGGTTTTGGGGCGGAATGAATTTTTTCGTTCCG
GAAAAAGTAATTCCCCGGGAACGTAGGGTATCGGTTTCATAGGCTCGCCA
AATGGGATATAGGTGGAAAGGTAAAAAAAACTGAGCCAAGCAAAGGATAG
AGAAGTCTTGTAATCATCGCAGGTTAAAGGGGGGATGTTATTTTAGCCTG
CAAATAGTGTAATTATTGGATCCTGTAAAGAGAAAAGGACGAATGCGCTG
AAGATAAGAACATTTATTGATATTAAATTATTAATTTTTTATGAAGCGGA
GTAATTAATTTTATCTCTCAGCTTTTGTGTGATGCAAACGTCTTTCCATA
AGTTCTTTCTTTCAATGATTCTAGCTTATTCTTGCTGCTCTTTAAATGGG
GGGGGATATGCAGCAGAAATCATGGTTCCTCAAGGAATTTACGATGGGGA
GACGTTAACTGTATCATTTCCCTATACTGTTATAGGAGATCCGAGTGGGA
CTACTGTTTTTTCTGCAGGAGAGTTAACATTAAAAAATCTTGACAATTCT
ATTGCAGCTTTGCCTTTAAGTTGTTTTGGGAACTTATTAGGGAGTTTTAC
TGTTTTAGGGAGAGGACACTCGTTGACTTTCGAGAACATACGGACTTCTA
CAAATGGGGCAGCTCTAAGTAATAGCGCTGCTGATGGACTGTTTACTATT
GAGGGTTTTAAAGAATTATCCTTTTCCAATTGCAATTCATTACTTGCCGT
ACTGCCTGCTGCAACGACTAATAAGGGTAGCCAGACTCCGACGACAACAT
CTACACCGTCTAATGGTACTATTTATTCTAAAACAGATCTTTTGTTACTC
AATAATGAGAAGTTCTCATTCTATAGTAATTTAGTCTCTGGAGATGGGGG
AGCTATAGATGCTAAGAGCTTAACGGTTCAAGGAATTAGCAAGCTTTGTG
TCTTCCAAGAAAATACTGCTCAAGCTGATGGGGGAGCTTGTCAAGTAGTC
ACCAGTTTCTCTGCTATGGCTAACGAGGCTCCTATTGCCTTTGTAGCGAA
TGTTGCAGGAGTAAGAGGGGGAGGGATTGCTGCTGTTCAGGATGGGCAGC
AGGGAGTGTCATCATCTACTTCAACAGAAGATCCAGTAGTAAGTTTTTCC
AGAAATACTGCGGTAGAGTTTGATGGGAACGTAGCCCGAGTAGGAGGAGG
GATTTACTCCTACGGGAACGTTGCTTTCCTGAATAATGGAAAAACCTTGT
TTCTCAACAATGTTGCTTCTCCTGTTTACATTGCTGCTAAGCAACCAACA
AGTGGACAGGCTTCTAATACGAGTAATAATTACGGAGATGGAGGAGCTAT
CTTCTGTAAGAATGGTGCGCAAGCAGGATCCAATAACTCTGGATCAGTTT
CCTTTGATGGAGAGGGAGTAGTTTTCTTTAGTAGCAATGTAGCTGCTGGG
AAAGGGGGAGCTATTTATGCCAAAAAGCTCTCGGTTGCTAACTGTGGCCC
TGTACAATTTTTAAGGAATATCGCTAATGATGGTGGAGCGATTTATTTAG
GAGAATCTGGAGAGCTCAGTTTATCTGCTGATTATGGAGATATTATTTTC

FIG. 2A

GATGGGAATCTTAAAAGAACAGCCAAAGAGAATGCTGCCGATGTTAATGG
CGTAACTGTGTCCTCACAAGCCATTTCGATGGGATCGGGAGGGAAAATAA
CGACATTAAGAGCTAAAGCAGGGCATCAGATTCTCTTTAATGATCCCATC
GAGATGGCAAACGGAAATAACCAGCCAGCGCAGTCTTCCAAACTTCTAAA
AATTAACGATGGTGAAGGATACACAGGGGATATTGTTTTTGCTAATGGAA
GCAGTACTTTGTACCAAAATGTTACGATAGAGCAAGGAAGGATTGTTCTT
CGTGAAAAGGCAAAATTATCAGTGAATTCTCTAAGTCAGACAGGTGGGAG
TCTGTATATGGAAGCTGGGAGTACATGGGATTTTGTAACTCCACAACCAC
CACAACAGCCTCCTGCCGCTAATCAGTTGATCACGCTTTCCAATCTGCAT
TTGTCTCTTTCTTCTTTGTTAGCAAACAATGCAGTTACGAATCCTCCTAC
CAATCCTCCAGCGCAAGATTCTCATCCTGCAGTCATTGGTAGCACAACTG
CTGGTTCTGTTACAATTAGTGGGCCTATCTTTTTTGAGGATTTGGATGAT
ACAGCTTATGATAGGTATGATTGGCTAGGTTCTAATCAAAAAATCAATGT
CCTGAAATTACAGTTAGGGACTAAGCCCCCAGCTAATGCCCCATCAGATT
TGACTCTAGGGAATGAGATGCCTAAGTATGGCTATCAAGGAAGCTGGAAG
CTTGCGTGGGATCCTAATACAGCAAATAATGGTCCTTATACTCTGAAAGC
TACATGGACTAAAACTGGGTATAATCCTGGGCCTGAGCGAGTAGCTTCTT
TGGTTCCAAATAGTTTATGGGGATCCATTTTAGATATACGATCTGCGCAT
TCAGCAATTCAAGCAAGTGTGGATGGGCGCTCTTATTGTCGAGGATTATG
GGTTTCTGGAGTTTCGAATTTCTTCTATCATGACCGCGATGCTTTAGGTC
AGGGATATCGGTATATTAGTGGGGGTTATTCCTTAGGAGCAAACTCCTAC
TTTGGATCATCGATGTTTGGTCTAGCATTTACCGAAGTATTTGGTAGATC
TAAAGATTATGTAGTGTGTCGTTCCAATCATCATGCTTGCATAGGATCCG
TTTATCTATCTACCCAACAAGCTTTATGTGGATCCTATTTGTTCGGAGAT
GCGTTTATCCGTGCTAGCTACGGGTTTGCGAATCAGCATATGAAAACCTC
ATATACATTTGCAGAGGAGAGCGATGTTCGTTGGGATAATAACTGTCTGG
CTGGAGAGATTGGAGCGGGATTACCGATTGTGATTACTCCATCTAAGCTC
TATTTGAATGAGTTGCGTCCTTTCGTGCAAGCTGAGTTTTCTTATGCCGA
TCATGAATCTTTTACAGAGGAAGGCGATCAAGCTCGGGCATTCAAGAGCG
GACATCTCCTAAATCTATCAGTTCCTGTTGGAGTGAAGTTTGATCGATGT
TCTAGTACACATCCTAATAAATATAGCTTTATGGCGGCTTATATCTGTGA
TGCTTATCGCACCATCTCTGGTACTGAGACAACGCTCCTATCCCATCAAG
AGACATGGACAACAGATGCCTTTCATTTAGCAAGACATGGAGTTGTGGTT
AGAGGATCTATGTATGCTTCTCTAACAAGTAATATAGAAGTATATGGCCA
TGGAAGATATGAGTATCGAGATGCTTCTCGAGGCTATGGTTTGAGTGCAG

FIG. 2B

GAAGTAGAGTCCGGTTCTAAAAATATTGGTTAGATAGTTAAGTGTTAGCG
ATGCCTTTTTCTTTGAGATCTACATCATTTTGTTTTTTAGCTTGTTTGTG
TTCCTATTCGTATGGATTCGCGAGCTCTCCTCAAGTGTTAACGCCTAATG
TAACCACTCCTTTTAAGGGAGACGATGTTTACTTGAATGGAGACTGCGCT
TTTGTCAATGTCTATGCAGGAGCTGAAGAAGGTTCGATTATCTCAGCTAA
TGGCGACAATTTAACGATTACCGGACAAAACCATACATTATCATTTACAG
ATTCTCAAGGGCCAGTTCTTCAAAATTATGCCTTCATTTCAGCAGGAGAG
ACACTTACTCTGAGAGATTTTTCGAGTCTGATGTTCTCGAAAAATGTTTC
TTGCGGAGAAAAGGGAATGATCTCCGGGAAAACCGTGAGTATTTCCGGAG
CAGGCGAAGTGATTTTCTGGGATAACTCCGTGGGGTATTCTCCTTTATCT
ACTGTGCCAACCTCATCATCAACTCCGCCTGCTCCAACAGTTAGTGATGC
TCGGAAAGGGTCTATTTTTTCTGTAGAGACTAGTTTGGAGATCTCAGGCG
TCAAAAAAGGGGTCATGTTCGATAATAATGCCGGGAATTTCGGAACAGTT
TTTCGAGGTAAGAATAATAATAATGCTGGTGGTGGAGGCAGTGGGTTCCG
CTACACCATCAAGTACGACTTTTACAGTTAAAAACTGTAAAGGGAAAGTT
TCTTTCACAGATAACGTAGCCTCTTGCGGAGGCGGAGTGGTTTATAAAGG
CATTGTGCTTTTCAAAGACAATGAAGGAGGCATATTCTTCCGAGGGAACA
CAGCATACGATGATTTAAGGATTCTTGCTGCTACTAATCAGGATCAGAAT
ACGGAGACAGGAGGCGGTGGAGGAGTTATTTGCTCTCCAGATGATTCTGT
AAAGTTTGAAGGCAATAAAGGTTCTATTGTTTTTGATTACAACTTTGCAA
AAGGCAGAGGCGGAAGCATCCTAACGAAAGAATTC

FIG. 2C

MQTSFHKFFLSMILAYSCCSLNGGGYAAEIMVPQGIYDGETLTVSFPYTV
IGDPSGTTVFSAGELTLKNLDNSIAALPLSCFGNLLGSFTVLGRGHSLTF
ENIRTSTNGAALSNSAADGLFTIEGFKELSFSNCNSLLAVLPAATTNKGS
QTPTTTSTPSNGTIYSKTDLLLLNNEKFSFYSNLVSGDGGAIDAKSLTVQ
GISKLCVFQENTAQADGGACQVVTSFSAMANEAPIAFVANVAGVRGGGIA
AVQDGQQGVSSSTSTEDPVVSFSRNTAVEFDGNVARVGGGIYSYGNVAFL
NNGKTLFLNNVASPVYIAAKQPTSGQASNTSNNYGDGGAIFCKNGAQAGS
NNSGSVSFDGEGVVFFSSNVAAGKGGAIYAKKLSVANCGPVQFLRNIAND
GGAIYLGESGELSLSADYGDIIFDGNLKRTAKENAADVNGVTVSSQAISM
GSGGKITTLRAKAGHQILFNDPIEMANGNNQPAQSSKLLKINDGEGYTGD
IVFANGSSTLYQNVTIEQGRIVLREKAKLSVNSLSQTGGSLYMEAGSTWD
FVTPQPPQQPPAANQLITLSNLHLSLSSLLANNAVTNPPTNPPAQDSHPA
VIGSTTAGSVTISGPIFFEDLDDTAYDRYDWLGSNQKINVLKLQLGTKPP
ANAPSDLTLGNEMPKYGYQGSWKLAWDPNTANNGPYTLKATWTKTGYNPG
PERVASLVPNSLWGSILDIRSAHSAIQASVDGRSYCRGLWVSGVSNFFYH
DRDALGQGYRYISGGYSLGANSYFGSSMFGLAFTEVFGRSKDYVVCRSNH
HACIGSVYLSTQQALCGSYLFGDAFIRASYGFGNQHMKTSYTFAEESDVR
WDNNCLAGEIGAGLPIVITPSKLYLNELRPFVQAEFSYADHESFTEEGDQ
ARAFKSGHLLNLSVPVGVKFDRCSSTHPNKYSFMAAYICDAYRTISGTET
TLLSHQETWTTDAFHLARHGVVVRGSMYASLTSNIEVYGHGRYEYRDASR
GYGLSAGSRVRF

FIG.3

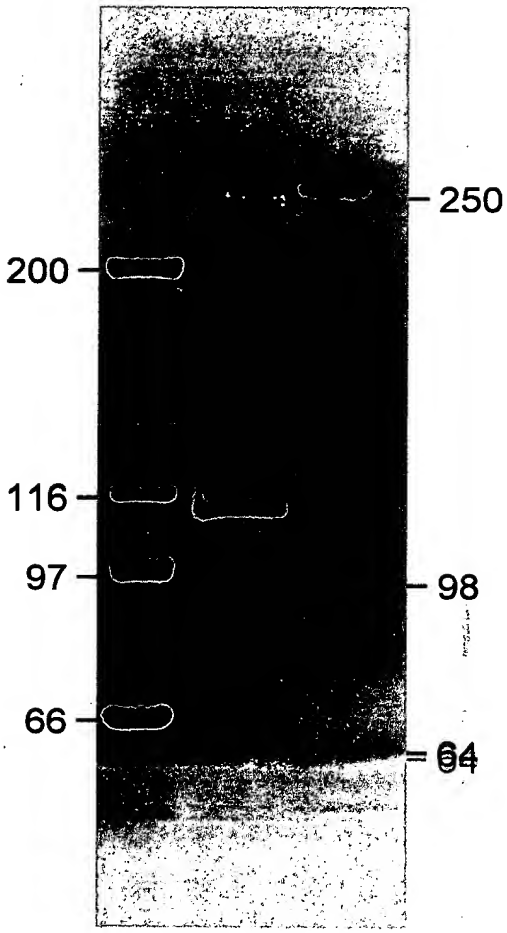

FIG.4

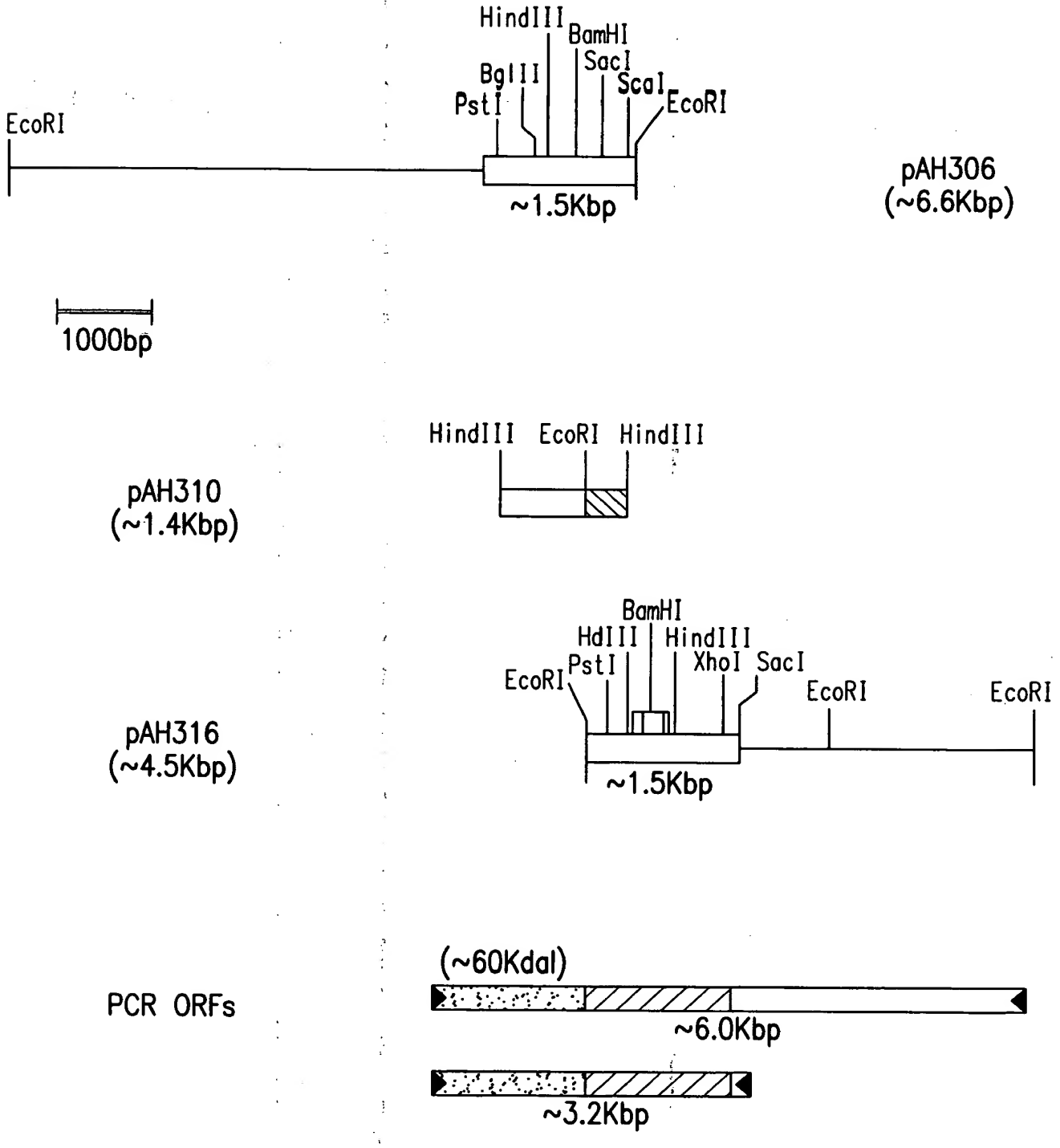
HindIII
BamHI
SacI
BglII
ScaI
PstI
EcoRI
EcoRI
~1.5Kbp
pAH306
(~6.6Kbp)
1000bp
HindIII EcoRI HindIII
pAH310
(~1.4Kbp)
BamHI
HdIII
HindIII
EcoRI
PstI
XhoI
SacI
EcoRI
EcoRI
pAH316
(~4.5Kbp)
~1.5Kbp
(~60Kdal)
PCR ORFs
~6.0Kbp
~3.2Kbp

FIG.5

L2 EIMVPQGIYDGETLTVSFPYTVIGDPSGTTVF
F
B
100*
L2 SAGELTLKNLDNSIAALPLSCFGNLLGSFTVLGRGHSLTFENIRTSTNGAALSNSAADGL
F D NS
B D NS
L2 FTIEGFKELSFSNCNSLLAVLPAATTNKGSQTPTTTSTPSNGTIYSKTDLLLLNNEKFSFY
F N
B P N S
200*
L2 SNLVSGDGGAIDAKSLTVQGISKLCVFQENTAQADGGACQVVTSFSAMANEAPIAFVA
F T I
B S
L2 NVAGVRGGGIAAVQDGQQGVSSSTSTEDPVVSFSRNTAVEFDGNVARVGGGIYSYGNV
F
B
*300
L2 AFLNNGKTLFLNNVASPVYIAAKQPTSGQASNTSNNYGDGGAIFCKNGAQAGSNNSGS
F E N D [A]
B E N D [A]
400*
L2 VSFDGEGVVFFSSNVAAGKGGAIYAKKLSVANCGPVQFLRNIANDGGAIYLGESGELSL
F G
B L G
L2 SADYGDIIFDGNLKRTAKENAADVNGVTVSSQAISMGSGGKITTLRAKAGHQILFNDPIE
F
B M
500* EcoRI- I
L2 MANGNNQPAQSSKLLKINDGEGYTGDIVFANGSSTLYQNVTIEQGRIVLREKAKLSVNSL
F EP N
B EP N

FIG. 6A

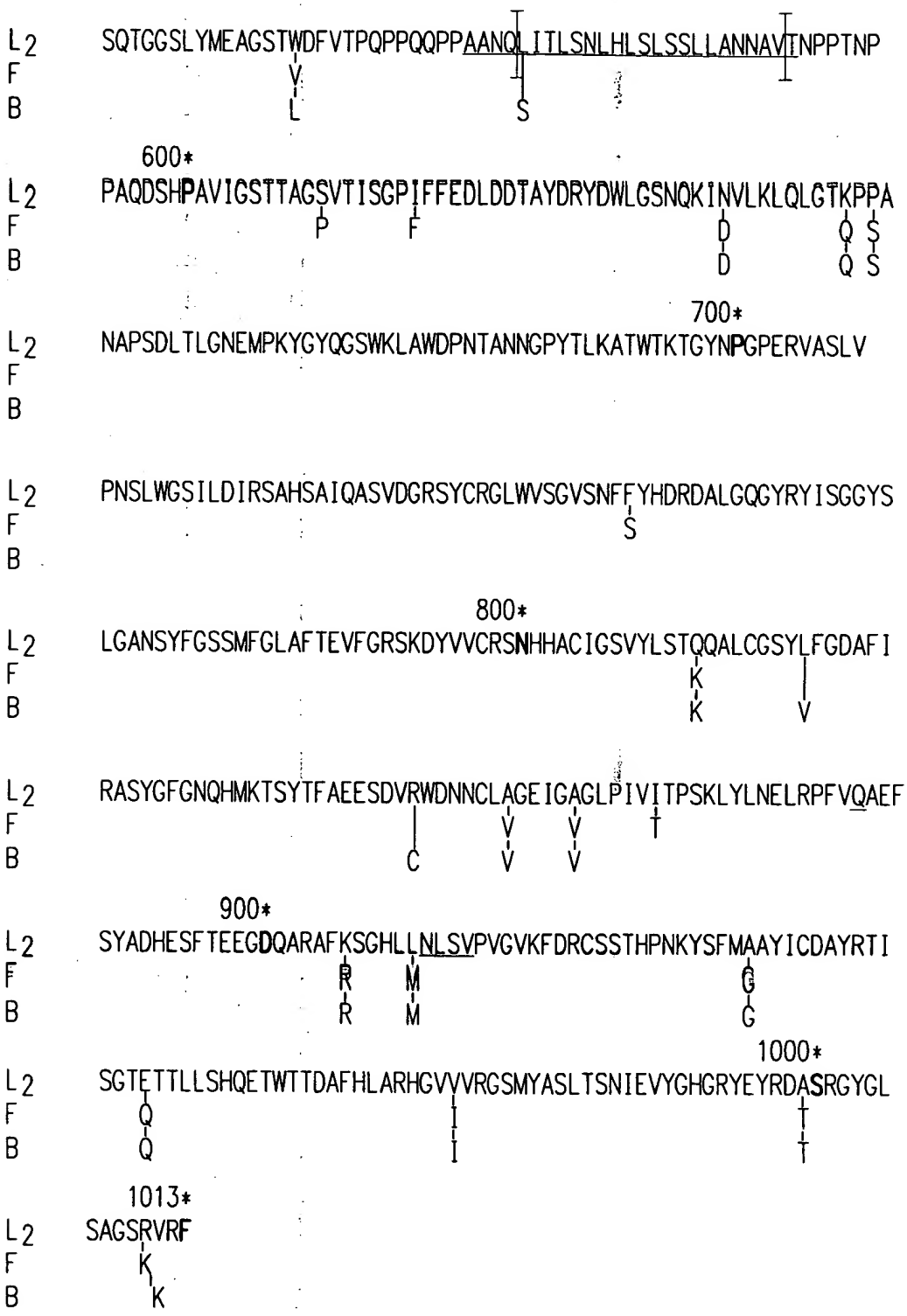
L2 SQTGGSLYMEAGSTWDFVTPQPPQQPPAANQLITLSNLHLSLSSLLANNAVTNPPTNP
F V
B L S
600*
L2 PAQDSHPAVIGSTTAGSVTISGPIFFEDLDDTAYDRYDWLGSNQKINVLKLQLGTKPPA
F P F D Q S
B D Q S
700*
L2 NAPSDLTLGNEMPKYGYQGSWKLAWDPNTANNGPYTLKATWTKTGYNPGPERVASLV
F
B
L2 PNSLWGSILDIRSAHSAIQASVDGRSYCRGLWVSGVSNFFYHDRDALGQGYRYISGGYS
F S
B
800*
L2 LGANSYFGSSMFGLAFTEVFGRSKDYVVCRSNHHACIGSVYLSTQQALCGSYLFGDAFI
F K
B K V
L2 RASYGFGNQHMKTSYTFAEESDVRWDNNCLAGEIGAGLPIVITPSKLYLNELRPFVQAEF
F V V T
B C V V
900*
L2 SYADHESFTEEGDQARAFKSGHLLNLSVPVGVKFDRCSSTHPNKYSFMAAYICDAYRTI
F R M G
B R M G
1000*
L2 SGTETTLLSHQETWTTDAFHLARHGVVVRGSMYASLTSNIEVYGHGRYEYRDASRGYGL
F Q I T
B Q I T
1013*
L2 SAGSRVRF
F K
B K

FIG. 6B

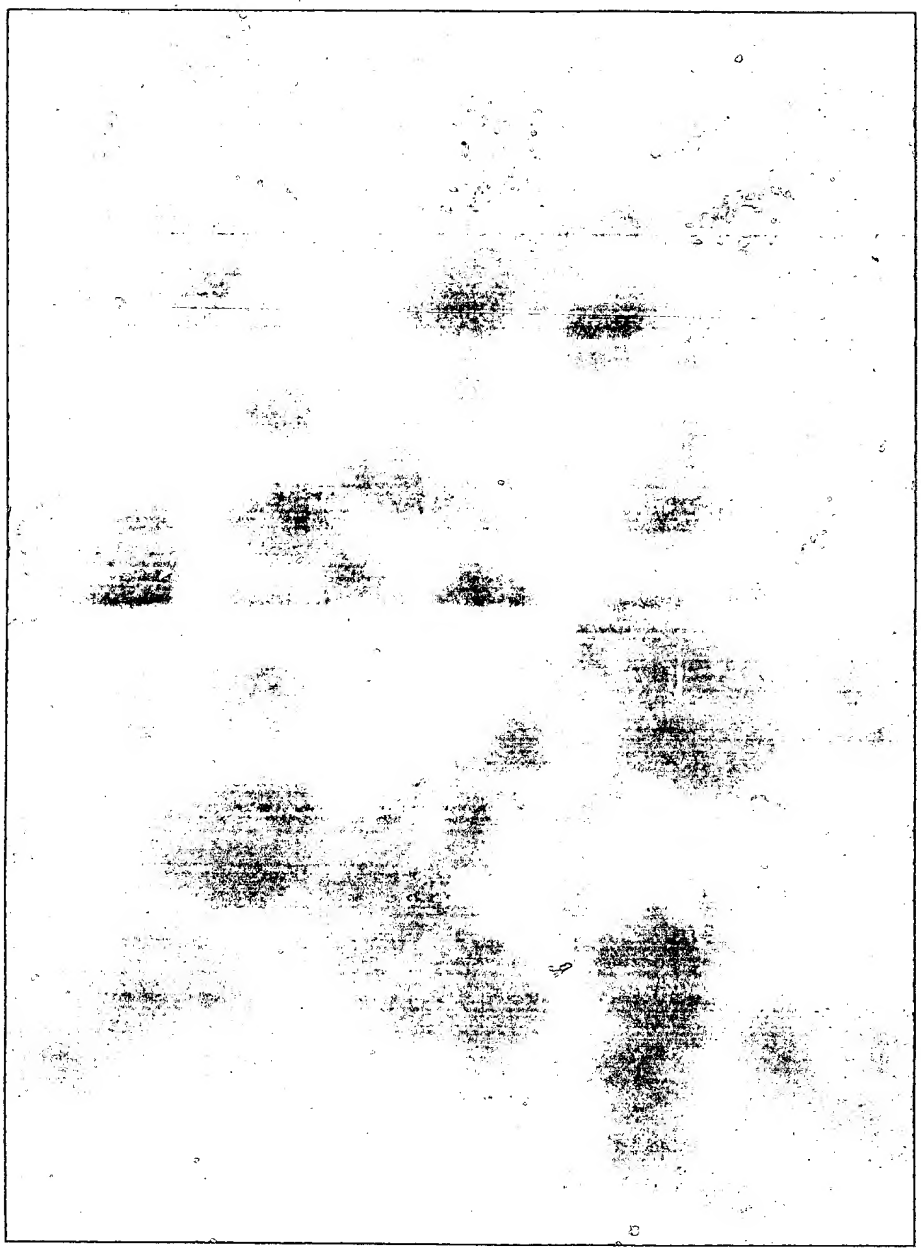

FIG.7A

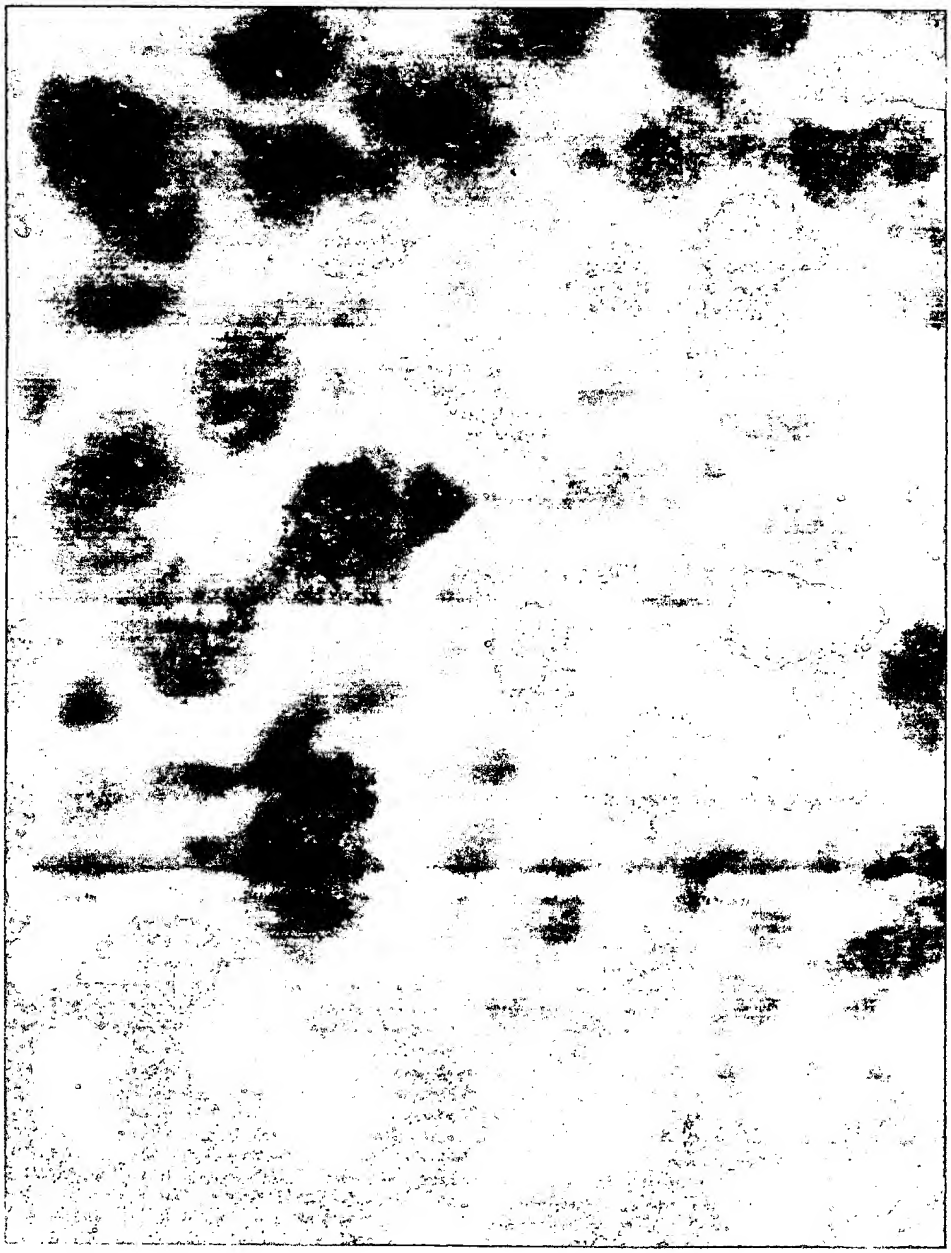

FIG.7B

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